AMERICAN VETERINARY REVIEW,

APRIL, 1887.

EDITORIAL.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—Semi-annual meeting —Failure in former years; success in 1887—one of the largest audiences ever in attendance—good work of the committees—the success an evidence of the good that might be done—election of new members—amendment by Professor C. B. Michener—the association to be composed of graduates only—a timely action—enough begging for membership—that has been ignored—Massachusetts may have the first organization free from quackery, but the United States will in any case have the second—if not now at least in a few years. Action of various VETERINARY COLLEGES in relation to changes in educational training—caution necessary—difficult and delicate task. ARMY VETERNARIANS AGAIN— bill endorsed by the association—who asks for much may be content to accept less. CONTAGIOUS DISEASES—Dr. Salmon and Prof. McEachran present at the meeting—resolutions endorsing the Bureau of Animal Industry—down with political M.D's—no commission necessary to determine the character of the disease—another blow to inoculation—stamping-out process recommended—tuberculosis kills 125,000 persons annually—inspection of dairies and slaughter houses—recommendations to boards of health —veterinarians must be included in their staff. A competitive paper for the Prize of the Association and of the REVIEW—subject, Glanders—hope it will not prove to be a mere compilation—published now in sections, but will be issued entire hereafter—new subjects to be considered at a later period. Explanation to Dr. J. Gerth.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.—For a number of years past our new volume has opened with the report of the semi-annual meeting of the United States Veterinary Medical Association, and if we have not heretofore referred to

this meeting and its results with praise and approval it has not been through any fault on our part, but rather because, save in rare and exceptional cases, we have been unable to discover that it has been our duty to do so—a thing sincerely to be regretted. But, lest the casual reading of the report of the meeting recently held in Philadelphia should fail to convey an adequate impression of the character of that assemblage and the good results to be anticipated from it, we deem it but an act of justice to call attention to its proceedings with something more of emphasis and particularity than the mere current mention of the occasion. The session was held under the call of the Comitia Minora, and varied greatly from the custom of former occasions in proving to be an interesting and highly profitable meeting. A desire to inspect the progress achieved by the Veterinary Department of the University of Pennsylvania doubtless had some influence in drawing together a portion of the large number in attendance; but, aside from this, the arrangements were so judicious and the efforts of the various committees so well directed and so thorough, that no one can be surprised at the unwonted response which followed the roll-call. There seemed to be almost a concerted rivalry between the Eastern and Western constituencies in contributing to the representation and the consequent zeal and earnestness of the proceedings. We have attended nearly all the meetings of the Association, and with a single exception (that of the meeting of the Centennial year) we do not remember any other occasion so numerously attended, or when the work performed was ever so good and the membership so harmonious in spirit and sympathetic in feeling and purpose. The good that such gatherings might always accomplish, and the valuable results which might be secured, if the membership generally could but be brought to realize their duty to each other and to the community, are well illustrated by this meeting and its results.

The meeting of the Comitia Minora proved interesting, not only on account of the recommendation of a number of applicants for membership, but especially by reason of the notice given by Professor C. B. Michener of an amendment which he intends to propose, by which only regular graduates of veterinary medicine

shall be considered eligible to membership; a provision which will meet the unanimous approval of the Association. The time has fully come when the Association should make an effort to establish itself as the representative of the *regular profession*, and abolish the custom of begging for membership, which has already too long prevailed. This reform, if consummated, will place the Association second on the record of those who have adopted this wholesome and necessary policy, the Massachusetts Veterinary Association being the only one which thus far has held erect and firmly defended the standard of our profession.

At the general meeting a number of important reports were submitted by the various committees. One among these was in recommendation of a measure designed to secure a uniform standard of examination by the different veterinary colleges of the country. The resolution passed in response to the report of Dr. Hoskins will be read with interest. This is an important step and one which everyone will be glad to see properly acted upon, and is one of no great difficulty in execution, though requiring a great deal of moderation and deliberation in action. The varying relations which subsist among different colleges will, no doubt, interpose many minor difficulties in the way, and possibly special and peculiar interests may present themselves which may render the project exceedingly difficult to realize. May not the same remark apply to the motion made in relation to the endorsement by the Association of the bill for the improvement of the position and standing of our colleagues in the army? The endeavor to endow a veterinarian in the army with the rank of Colonel, in an army like that of the United States, is, we fear, a project which can hardly hope to command success when it is known that in some of the large European armies the grade of Major is the highest to which he can aspire. But who asks more may be pleased with less, provided it is an improvement at all. The subject of contagious diseases as they have prevailed in the United States could not be ignored, especially while the meeting was honored, as it was, by the presence of Dr. E. Salmon and Professor McEachran, and naturally enough tuberculosis and pleuro-pneumonia became the themes of a long and interesting

discussion. The resolutions relating to these maladies are too important to be merely referred to in the reports of the meeting. Those concerning contagious pleuro-pneumonia are in the terms following:

WHEREAS, Legislation in Congress on the subject of contagious pleuro-pneumonia has brought before the public the views of certain members of that body, in relation to that disease and our profession, which are not in accordance with generally received opinions, therefore be it

Resolved, That this Association does not consider it necessary to determine by any commission the specific character of that disease and its contagious nature, and that we heartily endorse the labors done by the Bureau of Animal Industry, and have full confidence in the fulfillment of its future work.

This resolution was undoubtedly intended to be an answer to the views of the two members of Congress who made themselves so conspicuous by their ignorance during the discussion of the Miller Bill. And again

Resolved, That this Association is convinced that inoculation for contagious pleuro-pneumonia is inapplicable and should not be adopted in the United States.

Resolved, That no animals should be placed in the infected stables until thorough disinfection has taken place.

Resolved, That all animals exposed to or having the disease should be destroyed.

The resolution relating to tuberculosis is also of great importance, and it is hoped that the committee having charge of the subject will see that there is no miscarriage in the attainment of the good it is expected to accomplish. It reads as follows:

WHEREAS, Tuberculosis is extensively prevalent throughout the country in both cattle and man, and whereas the consumption of meat and milk from tuberculous animals is the direct cause of a large proportion of the 125,000 human deaths which occur annually in the United States from tuberculosis; therefore be it

Resolved, That the attention of all Boards of Health throughout the country be called to the necessity of a rigid and competent inspection of all milk dairies and slaughter-houses.

Resolved, That all Boards of Health should have attached to their staff *qualified veterinarians* to carry on such inspection.

What more could be asked of such a meeting; is not this good work, and if to all that is added the reading of reports of

two very interesting cases from Dr. B. McInnes, Jr., and the usual notice of alterations of the by-laws, will not those who absented themselves from the session see cause for regretting their loss? The meeting was a good one, and the reception given by the Pennsylvania veterinarians to their colleagues on that occasion, especially by Prof. Huidekoper and his committee, was quite in keeping with the world-renowned hospitality of the Quaker City.

With the issue of this first number of our eleventh volume we begin the publication of a paper sent to us as that of a candidate for the prize offered by the United States Veterinary Medical Association and ourselves. The subject selected is very interesting, and, though it is one upon which volumes have already been written, we hope that the author will include in it something more than a mere general compilation of authorities. Some original thoughts or fresh investigations will, we anticipate, be presented. The paper, long as it is, promises to be one of the best of the competitive contributions of those elicited by the promised premiums. We are obliged to divide the article and to issue it in portions, but when completed we shall, in compliance with the requisition of the prize givers, have it printed entire and freely distributed for general reading and inspection.

Papers upon a number of new subjects will be found in the present number of the REVIEW, upon which we would like to offer special comment. Want of room for the present, however, compels their postponement to another issue. Some of these are of great importance, such as that of the Insurance Companies and that of the Registration of Veterinarians, as carried on at present in the State of New York. Members of the profession ought to keep watch of them and give their brethren the benefit of their varying personal thoughts.

We desire, in answer to a communication from our friend Dr. Gerth, to say that the remarks we made in our last issue did not apply to him, but to the person with whom his name was connected. We all know him too well ever to do him the injustice of placing him in the same category with his rival candidate for the State Veterinarianship of Montana.

ORIGINAL ARTICLES.

GLANDERS.

By Veterinarius.

A Contribution for the Prize offered by the U. S. Veterinary Medical Association for Papers published in the American Veterinary Review.

LITERATURE.—Billings—Relation of Animal Diseases to Public Health. Williams—Veterinary Medicine. Fleming—Veterinary Sanitary Science. Hirsch—Geographische Pathologie. Arbeiten, a. d. Kaiserlichen Gesundheits Amte 1886. Journal Comparative Medicine. Dieckerhoff—Pathologie u. Therapie fur Thierarzte. Zeitschrift fur Thier-medicin. Archiv. fur Thierheilkunde.

In a recent communication upon this subject I noticed that it was simply a repetition of former works and did not mention any of the latest investigations regarding the etiology of this disease. Within the last two years rapid strides have been made in tracing the etiology of glanders, and the diagnosis of chronic cases made almost a certainty, provided the veterinarian can make use of the latest scientific appliances. As none of those methods have as yet appeared in any of the veterinary journals * in this country, and as glanders is a source of great loss to horsemen in this country, I have written this communication in order that the latest and most expert means of diagnosis may be brought before the veterinary profession.

HISTORY OF GLANDERS.

That this dreaded equine disease was well known to the ancients cannot be disputed, as a great many writers have mentioned it; Apsyrtus, who lived in the 4th century, A.D., being undoubtedly the first. He described farcy as elephantiasis. Vegetius followed in the same direction in the next century. In the 13th century Rufus gave a fair description of the symptoms of the disease; he declared for its contagiousness, but considered it

*A most ridiculous attempt at noticing Loefler's work upon the etiology was made by one O'Leary in the January issue of the *Journal of Comparative Medicine.* One must really look upon it as an "Irish bull," and doubt if the writer of the notice ever read the original communication of Loefler's, as he certainly gives no evidence of having done so. He probably heard of it.

to occur in all manner of ways. In the 15th century Ruini held the same opinion. Winter von Adlers Flugel, a quaint German author of the 16th century, had many odd ideas concerning the nature of the disease. He describes it as occurring in two forms —"white," or stone glanders, which was curable in the earlier stages; and the other called "yellow," giving forth an offensive odor and incurable.

From the latter part of the last century there has always been an active controversy as to the genesis of glanders, one school affirming it was purely contagious, another admitting its contagiousness, but affirming its genesis to all sorts of circumstances. These two opinions still oppose each other, but those affirming the abiogenetic or spontaneous generation of glanders are gradually becoming less and less. At this present day there are still many advocates of its spontaneous generation both in France and England. Of modern English authors, Professor Williams and Dr. Fleming are the best known. Dr. Fleming, in his "Veterinary Police," speaks of glanders "as a special diathesis peculiar to the equine species." Now, glanders is not a "*diathesis*." Diathesis is derived from the Greek to "dispose," and the word means a peculiar condition of an organism, predisposing it to certain diseases, as scrofula disposes to tuberculosis. Glanders can be spoken of as a "dyscrasis." Logically, it cannot be applied to that peculiarity of the different animal species by which certain diseases originate in them primarily, or only in them. We cannot speak of a measles diathesis, or a rinderpest diathesis, any more than of a glanders diathesis. A diathesis is something inherited or produced. It is a weakness causing a tendency to secondary complications.

Acute glanders has been occasionally supposed to be merely the expression of purulent infection in the equine species, from the frequency with which it has been observed to follow severe operations, purulent fevers, or inflamed blood-vessels. Glanders is not a purulent affection, and when appearing under any of the above circumstances, was either present in a latent form prior to their occurrence, and they acted as the *causa sufficiens*, or the animal acquired it after either of the above conditions were produced.

GEOGRAPHICAL DISTRIBUTION OF GLANDERS.

Glanders is fast becoming a cosmopolitan disease. If the march of an empire makes its way westward this disease accompanies it. In civilized countries the extension of all contagious diseases bears direct relation to the intelligence of the Government in taking means to suppress them, and the frequency of the ease of travel and intercourse. Glanders has followed the same course.

At one time it was said not to prevail in hot climates; but it has acquired an alarming extension and breaks out at the different cavalry stations of the British forces in India, and other tropical countries. But where there is little or no intercourse with other parts, as in Iceland and other Northern countries, there is little or no glanders. This led to the assumption that it did not thrive in such a climate, and that it steadily increased as we proceeded from the North to the South, until we arrived at tropical limits. This is all wrong; the occasions to infection, with lack of sanitary police, being given, glanders will appear as frequently in one climate as another.

In this country glanders has become much more prevalent since the war. After the Franco-Prussian war glanders increased in Prussia (reported cases) from 959 cases for 1869–'70, and 996 for 1870–'71, to 1,729 for 1871–'72 and 2,058 for 1873–'74.

Glanders is also known in North China, and is of frequent occurrence at the Cape of Good Hope, and it is also prevalent in Honolulu, Sandwich Islands.

THE NATURE OF GLANDERS.

In speaking of any disease it is very necessary that both professionals and the public have an exact idea as to its true character. In this sense glanders is a *strictly contagious disease;* it arises by contagion only, that is, by contact either with a previously diseased animal, or with material from such an animal. A contagious disease is one which finds its origin within the organism of a given animal species, and extends from such an infected animal to other animals of the same species, or to animals of other species which possess more or less susceptibility to infection.

TRANSMISSION OF GLANDERS TO OTHER SPECIES OF ANIMAL LIFE.

Glanders also occurs in the ass and mule, and is also transmissible to man and all the domestic animals, *except to cattle.* Sheep are especially susceptible to infection. Goats have acquired the disease when kept in the same stables as diseased horses. The disease has been observed and intentionally produced in dogs, cats, prairie-dogs, white bears, lions, mice, guinea-pigs, rabbits, and, according to Gerlach and Spinola, the hog also, although no generalization of the disease appeared to take place in them.

PHENOMENOLOGY OF GLANDERS.

According to duration, glanders may be spoken of as *acute* or *chronic.* According to seat as *nasal*, *pulmonary* or *cutaneous* glanders; (farcy is also divided into *acute* and *chronic.*) Chronic glanders is the common, acute the rarer form.

INCUBATION AND DURATION.

By inoculation, from three to five days.

By natural infection, indefinite, the authorities varying from five to six days to as many weeks. In chronic glanders a period of apparent latency may exist for months, but even here there must be a period of incubation. Acute glanders may terminate in fifteen days, while the chronic form may continue for years; how many is an open question. Dieckerhoff mentions a case in which the disease was known to exist for a period of seven years. Chronic glanders invariably terminates in acute, but when acute follows known infection it never assumes a chronic form.

THE MANNER IN WHICH INFECTION OCCURS.

The infection gains access to a susceptible organism either by means of superficial wounds or excoriations, or through the digestive or respiratory tracts. In rare cases the disease may be transmitted by copulation. The bacilli do not appear able to penetrate through the uninjured skin or mucosa. The greater number of cases of farcy must be due to injuries in the skin. The views of authors differ greatly as to the possibility of infection by means of the digestive tract. Professor Williams says that "farcied matter made into balls and introduced into the stomach of a horse

has caused glanders." This question can only be satisfactorily settled by feeding susceptible animals with large quantities of purely cultivated bacilli, and the careful control of the same by inoculative experiments.

Infection through the respiratory tract is of far more importance, as it is well known that germs can penetrate to the most delicate ramifications of the bronchioles, as has been shown by numerous inhalation experiments with desiccated tubercle bacilli and other material.

The statistics that have been gathered from necroscopical examinations of glandered horses have shown numerous cases in which the lungs were the only organs visibly affected, or that the oldest phenomena were present in them. Inhalations with purely cultivated glanders bacilli have not yet been made.

It is an unquestionable fact that glandered mares have given birth to colts with the disease, that is, that the bacilli can pass from mother to fœtus; similar observations have been made with guinea-pigs.

THE ETIOLOGY OF GLANDERS.

Glanders, or better, the glanders-farcy disease, on account of its serious effects upon the agricultural interests of mankind, has been energetically combated on all sides. Past experience has demonstrated the uselessness of all medicines to cure or prevent this disease; hence it is but natural that every attempt should be made to prevent its eruption and extension. Therefore it becomes necessary that we should gain all the knowledge possible with reference to its etiology or cause.

Observations led to the conclusions that glanders was very common among horses that were kept in narrow, damp, ill-ventilated stalls, and under such circumstances often assumed a very malignant character; but closer and more thorough examination pointed to the fact that the very best hygienic conditions were not, in themselves, sufficient to prevent an outbreak of glanders when a diseased horse chanced to come among them, and that the disease extended from animal to animal, and unfavorable hygienic conditions were simply important aids in the extension of the disease.

It is remarkable that the earlier writers should have entirely overlooked the contagious nature of glanders. Neither Hippocrates, Aspyrtus or Vegetius mention such a thing as contagion. The idea of contagion seems to have first impressed itself on man's mind in the 17th century. The first positive assertions are to be found in Solleysel, 1664, who spoke of it as a contagious disease easily transmissible from horse to horse, even by means of air in stables where a diseased animal was kept among healthy ones. In 1734 Gaspard Saunier agreed with the views of Solleysel, and gave very distinct regulations for the disinfection of stables in which glandered horses had been kept, such as the removal of cribs and racks and renewal of the plastering. In 1741 Garsault advised the immediate slaughter of the diseased, and strict isolation of suspected horses, in order to put an end to the outbreak. Towards the end of the 18th century it was the prevailing opinion that glanders was a contagious disease; still, absolute proof was wanting. This can only be had by direct experiment. Endeavors in this direction were made by Abildgaard and Viborg in Denmark, and Blaine in England, who were successful in producing glanders in horses and asses by inoculation with the nasal secretion of glandered horses. At this time in France there began a powerful reaction against the teachings that glanders was a contagious disease, and this did not abate until 1837, when Rayer brought before the Académie de Médecine the most convincing proof of the transmissibity of glanders to man, when its contagious character again gained credence.

In Germany most of the great authorities had always been in favor of the contagious character of glanders. In 1841, Dr. Schilling gave sufficient evidence of the transmission of glanders to human beings. In 1835, regulations were issued treating the disease from this standpoint, and contained a very minute description of its course in man. The contagious nature of glanders gained general adoption as a scientific fact, but the world was still in the dark as to the real nature of the infecting agent. All observers agreed in considering the nasal secretion of glandered horses as the vehicle by which infection was made possible. In 1841 Berhard Langenbeck made an exhaustive examination of

the nasal secretion of a glandered horse and found "the transparent thallus of a mycelial fungus, and numerous masses of reddish-brown streptococci;" this observation was undoubtedly correct, but the organisms owe their origin to the food, and can be found in the nasal secretion of almost any horse, and, therefore, they cannot have anything to do with the cause of glanders. During the next twenty years no similar observations were recorded. Virchow, in his classical studies on the pathological anatomy of the neoplastic production in glanders, says that one must look upon the contagion as of an acrid or irritative nature, whether it worked from the blood or directly upon the tissues. In 1868, several new works appeared upon this question.

Chauveau stated that the inficiens (or infecting material) of glanders was contained in the solid elements of the infecting or infectious material; in his work he gave an exhaustive description.

He took 10 c-c-ms of pus from the pulmonary abscess of a glandered horse and diluted the same with 200 c-c-ms of water. This mixture was frequently stirred up and filtered so that nothing was left but the solid elements. He then mixed the latter with 500 c-c-ms of water and allowed it to stand over night. The fluid was then gently removed with a syphon and the refuse at the bottom of the vessel again diluted with another 500 c-c-ms of water and allowed to stand another night. This water being removed as before, still another 1,000 c-c-m's of distilled water was added, the mass being again stirred up and then filtered, the solid element being then mixed with very little water. The inoculation of several horses and donkeys with this solid material was followed by the eruption of glanders in four days, while similar experiments made with the last filtrated water gave negative results. Chauveau drew the following conclusion from these experiments: "That the leucocytes (or white blood-cells) suspended in the virulent fluids may be considered as the receptacles of the virus," which later observers have confirmed.

Hallier and Zurn conducted numerous investigations, but neglected to confirm their conclusions by inoculation experiments with horses. Semmer, of Dorpat, confirmed the conclusions of Zurn and Hallier, but his experiments gave negative results.

In 1869, Christot and Keiner presented a communication to the Academy at Paris. They had had an opportunity to study glanders in man, and successfully transmitted the disease to horses, cats and guinea-pigs; they found a form of lower organism both in the blood and other products, even in cases of chronic glanders. The size of the objects they saw was as follows: the smaller had a diameter of 0.0012 mm., the larger had a diameter greater than the above. If objects as the above were so prevalent in the blood and pathological products in glanders, and so easily seen, then other microscopists must have seen them, but this has not been the case. Rindfleisch also reported the presence of bacteria in glanders. Roszahegyi reported a special bacillus in the tissues of a man that died of glanders which differed from the Bacterin Termo in form and being immovable, but did not give any proof of its casual connection with that disease.

In order to prove that a specific micro-organism is the cause of a certain disease, it is necessary that it conform to the three postulates of Robert Koch:

(1.) One and the same micro-organism must be constantly present in the diseased portions of the same individual and all individuals having the same disease.

(2.) This foreign organism must be isolated from the tissues of the diseased individual, and cultivated by itself as an independent individuality through many generations until we arrive at a constant purity in our cultivations.

(3.) The same disease in all respects must be produced by the inoculation of susceptible individuals from such pure cultivation.

To accomplish this, place small pieces of the organs of horses that have been immediately killed on account of glanders in absolute alcohol; especial attention must be given to the selection of material that did not stand in relation with the external world during the life of the animal. Hardened lung-tissue carefully cut into thin sections with the microtome, and then subjected to various methods of coloring; on account of the great resemblance between glanders and tuberculosis it was first necessary to try the method that has acquired a specific value in connection with the bacilli of the latter disease; no satisfactory results followed, as

was also the case in using Weigert's gentian-violet picro-carmine method. Numerous other methods and many coloring materials were also tried, but with no satisfactory results. Methyl-blue was the only material that gave any hopes; it was used as follows: 30 c-c-ms concentrated alcoholic solution of methyl-blue, 100 c-c-ms of kali causticum, 1 to 10,000 of aqua. Place sections of tissue in the above solution for about five minutes, and then wash quickly in a solution of 1 per cent. acetic acid, then in absolute alcohol, then in cedar oil, and mount in Canada balsam, which should not be dissolved with chloroform, but with xyol or turpentine for all aniline colors. Careful microscropic examination of sections treated as above will show the presence of very delicate bacilli in the peripheral portions of glanders noduli, which bear a very strong resemblance to those of tuberculosis; they could not be putrefactive bacteria, as the organs were hardened when perfectly fresh, and their presence was limited to the noduli and not scattered indiscriminately over the specimen. The small number present, and the fact that they were entirely wanting in some specimens, did away with any doubt regarding their genetrical connection with the pathological products. As the coloring method did not allow of any positive conclusion as to the value of these bacilli, the investigators had recourse to other methods.

Cultivation is undoubtedly the most satisfactory method of demonstrating the presence of micro-organism in a tissue or organ. By this method Strauss and Chamberland in inoculated anthrax were able to demonstrate the presence of anthrax bacilli in the blood of fœti of pregnant guinea-pigs, in direct contradiction to the microscopic experiences of all previous observers.

On the 14th of September, 1882, Dr. Loeffler commenced his experiments. In order to render them as certain as possible, he had recourse to a very large selection of cultivating media, such as sterilized and solidified blood serum drawn from the horse and sheep, infusions made from the flesh of horses, rabbits, hens, cattle and man, as well as various vegetable substances.

To prevent the pieces of the organs used for cultivations becoming polluted, they were placed in a vessel containing a 5 per cent. solution of carbolic acid for five minutes, and then put in a

1 per cent. solution of corrosive sublimate, then placed on a clean glass plate. The hands of the operator, as well as the instruments, were disinfected before use. Great value could be placed upon cultivations from the liver and spleen, as the accidental pollution of their interior was almost impossible under such circumstances. A section was made in the vicinity of a glanderous nodule, and then another down on the same with a fresh knife, but not into it; the node was then seized with sterilized forceps and torn apart; the purulent material in such a growth thus escaped contact with any instrument, and was immediately inoculated upon the various media by means of sterilized platinum needles, a fresh one being used in each case. Seventy cultivations were made and placed in a thermostat having a temperature of 38° C. During the first two days no important changes occurred; on the third day they became clouded with the exception of that made from the juice of stewed prunes. The surface of the consolidated blood serum became covered with numerous transparent drops having a yellowish color, giving the surface of the serum the appearance of having been sprinkled with some fluid; the majority of the tubes contained nothing but these drops, but in a few some isolated non-transparent white or yellowish colonies appeared, easily distinguished from the yellow drops, and gave the impression that they were of a pollutive nature or accidental occurrences. A microscopic examination of the yellow transparent colonies revealed the presence of very fine delicate bacilli corresponding in all essentials with those found in sections of the pathological neoplasms of glanders. The same bacilli were found on all the cultures except the prune juice infusion. An occasional tube was found polluted with a micro-organism of another form and character. Some tubes inoculated with material from diseased lymph glands had development of colonies. The bacilli varied very little in length, some being between one and two-thirds the diameter of a red blood corpuscle; they were straight or very slightly curved, being somewhat shorter and thicker than the bacillus of tuberculosis. The bacilli generally occurred in lateral pairs. When examined in some cultivating medium suspended in a hollow object-glass they exhibited a very active Brownian movement, but idiosyn-

cratic mobility was not observed. In such a fluid the rods appear thicker and shorter than in cultures upon blood serum. The development of this heretofore unknown micro-organism, so characteristic in the different media, and the fact that the cultures were taken from seven different glanders noduli, thereby justifies the hypothesis that these bacilli are the real etiological moment in glanders.

(*To be continued.*)

EPIDEMIC VARIOLA IN SHEEP.

By G. Archie Stockwell, M.D., F.Z.S.

Recently was brought to my knowledge the fact that in the early part of the present century the flocks, herds and stables of America were ravaged by an epidemic of that foul disorder, the small-pox—from 1809 to 1820. Indefinite as is the history thereof, there is much that is of value. Every epidemic presents two factors for consideration—the relations of the malady to its victims directly, and its relations indirectly to creatures of another race, including man. In this connection it would be interesting (as well as of value) to know: Whether this epidemic—which attacked sheep, cattle and horses alike—arose coincidently among all three; what were the exact evidences of contagion aside from direct infection, and whether its appearance in any one race influenced its rise among others. Here are involved physiological and pathological problems that are greatly mooted and very little understood further than the limited knowledge that accrues to the relations of *variola bovina* and *variola humana:* unfortunately, no satisfactory data are obtainable. One fact was evolved, to the satisfaction of the laity, if *not* of the medical profession, that the disease as contracted by man from all of these three forms of animal life afforded a degree of protection from the contagion of *variola humana;* and a venerable gentleman of my acquaintance, a life long farmer, who yet exhibits upon his hands and wrists the scars obtained in boyhood from this very epidemic, and from *sheep*, as he insists, has ever remained proof against small-pox and

attempts repeatedly made to secure an inoculated *vaccinea*. His duties were such that the flocks became his especial care, while the cattle and horses fell to the lot of others, his elders; and the sheep necessarily demanded repeated handling, his waking hours being almost wholly passed among them; hence the contracting of a *variola ovinæ*.

In gathering material for a paper upon the relations of animal diseases to man, through the favor of a friend in Boston I have been put in possession of a copy of a letter relating to this epidemic as it appeared in *sheep* during the year 1810–'11, written by Dr. Thomas Thaxter, of Hingham (Mass.), to Hon. James Bowdin, of Boston, which is of such interest that I venture to lay a digest thereof before the readers of the REVIEW. The disease was first observed by him among a flock of merino sheep recently imported from Portugal, and "was as distinctly marked as in man."

Three forms of the disease were observed, which Dr. Thaxter classifies as "*distinct*, *confluent* and *purple*." The infection was communicated from one to another in the same manner as with human beings—"from coming within the atmosphere of each other at an advanced stage of the disease (at which time they have a peculiar odor), from being enclosed in the same pen, or from feeding from the same utensils that had previously been used by sick sheep without cleaning."

The disease first discovered itself "from the twelfth to fifteenth day after receiving the infection." The symptoms of those with *variola purpura* succeeded so rapidly that it was difficult to distinguish one stage from another; but all were very much swollen about the body, and respiration soon became slow, labored and difficult. Such died early, exhibiting the dark, grumous condition of integument so frequently observed in man under like circumstances and conditions.

Confluent and *distinct variolas* appeared more marked and afforded better opportunity for observation. At the outset of the attack each animal inclined to avoid the society of its companions, seeking retired places in the yard, and the mouth and tongue worked incessantly, as if tasting something bitter or un-

palatable. Though not inclined to ruminate, none refused food wholly. Soon each began to rub its head against the fence or wall, and about the same time a discharge from the nose appeared, very like the first symptoms of a coryza or cold; the eyes were swollen, the ears drooped, the head hung down, and the body generally was drawn up with indications of acute suffering. In three or four days (occasionally not until the fifth or sixth) they pretty much refused food, and appeared to suffer with sore mouths and throats, so much so as to interfere with mastication and deglutition. In the meantime excessive thirst was apparent, though if allowed more than a pint of water at a time considerable distress was manifested.

An examination of those with *confluent variola* discovered spots on the skin varying in size from a half dime to a dollar, with an appearance like *herpes circinatus*, but without inflammation; but these contained no fluid, even though the sheep survived to the ninth and tenth day. At this advanced stage of the malady the nostrils poured forth copious mucous discharges, sometimes white, but more frequently tinged or streaked with yellow.

The symptoms manifested by those with *distinct variola* were much the same as the foregoing at the outset, but less in *degree*. The third or fourth days the pocks could be distinguished as hard, prominent pustules, situate for the most part between the shoulders and breast, upon the udder, and on the tail. After a lapse of three or four days these pustules became flattened, and contained so small a quantity of fluid that it was seldom possible to secure more than a single drop where several might reasonably be expected; the pustules afterwards produced a dark scab, which lingered a number of days before separating, and wherever found upon the animal induced the fleece to fall.

A few had the *distinct* form mildly, after three or four days would ruminate occasionally, and seemed to have exacerbations of the disease which were manifested by uneasy, restless movements, as if in pain. Several, while the disorder was in progress, and others after it appeared to have subsided, were taken with paralysis of the extremities; and lambs, more especially, were

prone to such attacks, which, in them, oftentimes was the first manifestation of illness. Throughout the disorder all exhibited great tenderness or soreness of the skin and sensibility to handling, shrinking every time the fleece was touched. During the last stage they frequently huddled together as for warmth.

Several modes of treatment were tried, including bleeding, purging with neutral salts, administration of castor oil, senna, and *thorowstock** and glysters. In some instances, where the creatures were markedly costive, these remedies gave temporary relief, but no more; but in general the alvine and urinary evacuations were passed without artificial aid. Blisters also were applied between the shoulders and breast, and onions to the throat, and water-gruel given along with infusions of mullin, saffron, juniper, etc., with injections in the nasal passages of vinegar and oil to promote discharges therefrom. But no satisfactory or permanent results were had from any of these efforts.

A merino ewe, imported in November, lambed on the 27th of January, with healthy offspring and good udder of milk. On the 30th, twelve days after being isolated from her diseased companions, she exhibited signs of indisposition, and soon refused to nurse the lamb, though her bag was hard and swollen, as if overdistended with milk. The lamb died February 6th, the mother the day following—twenty-one days after being exposed to infection.

In February the disease was first discovered among the native sheep. Nine out of twenty-two ewes were taken within two days, six of which died—one in twelve, one in thirty and one in forty-eight *hours*; the other three lived nine, sixteen and thirty *days* respectively, the last succumbing only after losing both eyes. An autopsy of the last two revealed a suppuration near the base of the heart in the first, and purulent infiltration of the lungs in the second—a condition found to have occurred in a number that survived the first ravages of the malady only to succumb to subsequent and secondary influences, exhibiting either ulceration of

*Probably *linseed* or *linseed oil*, which sometimes obtains this designation, though formerly a cathartic bolus of many and wondrous ingredients was known by this title.

the lungs or hydatids of the liver, or both, and tubercular deposits throughout the body, formed both with serum and with pus.

The first endeavor to check the disorder was to separate the well from the sick, placing the former in non-infected barns. But whether the man who had them in charge conveyed the infection from one barn to another in his clothing, or carelessly employed the utensils set apart for the infected sheep in which to feed the sound ones, is not known. It was supposed a stop had been put to the ravages of the disease when the sound sheep had been isolated from those infected for more than fifteen days without indications of disease; but all at once four new cases were perceived, three of which terminated fatally on the fifth and ninth days. During this time two ewes had the *distinct* form of *variola* so mildly as to pass unperceived had not accident drawn attention thereto. These were removed from the others, as it was thought, before they had opportunity to communicate the malady, for it was expected all attacked would die, being near the time of lambing.

At this point virus taken from the pustules of infected sheep was employed to inoculate the sound ones, though with little hope of favorable result; some had lambed just before inoculation, the remainder soon after. The lambs, too (twelve in number), as fast as they appeared, were inoculated on the third or fourth day. All, lambs and adults, took the disease mildly, and recovered readily, with no untoward results, and subsequently proved the healthiest of sheep, though nothing more was done for them than to provide suitable diet and an abundance of pure, fresh air. Save in a single instance, the disease, as the result of inoculation, manifested itself only for two or three days, after which they ate and ruminated naturally and freely. Some would never have been suspected of *variola* but for the inoculatory incisions, that contained good, *viable* pus, or from the discovery of the few pustules that appeared here and there, isolatedly, after a few days.

The exception above noted, the one longest and most affected, exhibited indirect inflammation at the point of inoculation, with a

tendency to sphacelation rather than suppuration. The remainder gave evidence of the disease by the formation of pus in the incisions on the second, third and fourth days, so that several drops could be collected daily for some days, and those earliest affected throve the best.

The appearances as enumerated lead to the conclusion that a typographical error occurs in Mr. Flagg's work, which was recently perused, as it is there stated that an inoculated small-pox appears in *two* days, while that of contagion is delayed from *fifteen* to *thirty*. Except pus found in the incisions of the former, in no instance was the disease made manifest before the *eighth*, *tenth* or *twelfth* day, nor did the eruption appear to form a *crisis* earlier; and many of the sheep ate, ruminated and nursed their lambs through the whole period of the disease, only two or three appearing at all ill, and only for as many days. As the result of contagion the disease was never delayed *more* than fifteen days before discovering itself by the usual symptoms, and, though in general the pustules of the *distinct* form were found thus early or earlier, the animals would remain ill fifteen or twenty days longer, and not appear wholly well or thriving for thirty or forty days more.

It is singular that, no matter whether the disease was taken by inoculation or contagion, in no instance did a ewe cast her young, not even in the most virulent cases, *confluent* or *purple*. In two instances, where lambs were prematurely cast, both could be traced to incautious handling, they being gravid with triplets; neither did the disorder affect the supply of milk, unless the sheep had been reduced and run down previous to lambing. There was less disposition to the formation of fluid within the pustules than in the human subject. And the lambs, on handling, were found to perspire very freely beneath, especially in the vicinity of the groins, while the testicles were more or less swollen. No opportunity was had of examining an old male, all under observation being ewes, in which no differences were discovered, whether nursing, gravid or barren.

* * * * * * *

Apropos of the foregoing, which would seem to inculcate

principles worthy of note, even at this day, including immediate inoculation, no matter what the season, condition of sheep, etc., on the breaking out of an epidemic, I recall the suggestion made by my friend Dr. John Hjaltelin regarding infectious and contagious disorders as occurring both in animals and men; and, from his long experience as Medical Inspector of Iceland, no one is in better position to know, since small-pox and typhus frequently run riot in that bleak corner of the world. In all epidemics, of whatever nature or class, he recommends the *free and lavish use of disinfecting fluids as of untold value in limiting and opposing their progress by contagion.*

Sheep kept in barns, while plenty of fresh air is possible, may yet be subjected to the influences of disinfectants in solution, especially such cheap and effective agents as chlorine and bromine waters. A solution of zinc chloride or muriate of lime sprinkled about is all sufficient if dispensed with no sparing hand, and the free use of charcoal in coarse powder is also advisable. Such will not only destroy the odors so characteristic of epidemics, but further render the germs (whence the odor) innocuous. Phenol is objectionable because of its volatile nature, and bi-chloride of mercury solution, owing to its excessively poisonous nature. The renowned Dr. Eisenmann, of Germany, used chlorine-water for this very purpose with most satisfactory results; and if, in the close turf cabins of Iceland, where ventilation is impossible—where families of a dozen or twenty are crowded into one small room but ten to twelve by six, oftentimes, sleeping in reversed order of heads, like sardines packed in a box—such simple method can limit the infection of malignant typhus to a single patient in any one habitation, as is *known* to have been done, the value of complete and thorough disinfection in incalculable and immeasurable.

When epidemics rage violently, there always appears a peculiar condition of the atmosphere of the neighborhood, perhaps due to high barometric pressure, perhaps to want of electric tension, which would lead us to believe that, after all, there is something in the *constitutio æris adynamica* of our fathers, supposed to originate malignant disease, though doubtless bad "air-constitu-

tion" is only a sequel or co-efficient cause aiding in the propagation and dissemination of seed already sown. And this can only be overcome by *true* disinfectants and germicides—not substances that merely replace one foul odor with another still *worse*.

PORT HURON, MICH.

HOG CHOLERA.

A SURE MEANS FOR THE PREVENTION OF THE DISEASE DISCOVERED.

BY FRANK S. BILLINGS, V.M.

SECOND ANNOUNCEMENT OF THE WORK DONE AT THE EXPERIMENT STATION OF THE STATE UNIVERSITY OF NEBRASKA FOR THE STUDY OF CONTAGIOUS AND INFECTIOUS ANIMAL DISEASES.

LINCOLN, NEB., Jan. 22, 1887.—To the Board of Regents and the Chancellor of the University—Gentlemen: Herewith please find my second, and the most important announcement of the work done under your auspices. I think that you have no reason to be disappointed, as we only began working July last. While much remains to be done, in a strictly scientific sense, we need to make but one large test experiment in order to turn the question of the prevention of swine plague by inoculation over to the State authorities. I will not attempt to thank you for the constant trust and support you have given me, as well as your co-laborers of the board of regents, because I cannot, but will rather endeavor to show my gratitude by future work.

TABLE OF EXPERIMENTS.

1	Six month old hog sick with swine plague (recovered)	Penned together.
2	Six months old hog recovered from swine plague last winter (no effect).	
3	Six months old hog sick with swine plague, died.	
4.	Six months old hog recovered from swine plague last winter, no effect.	
5.	Three months old hog in pen with No. 4 after 3 had died, no effect.	
6.	Three months old hog inoculated with culture from Mr. W's pig (of July 8, '86) July 20, '86, died July 25, '86.	

7. Three months old hog inoculated with culture from Mr. W's pig (of July 8, '86) July 20, '86, died Aug. 1, '86.
8. Three months old hog inoculated with culture from Mr. W's pig (of July 8, '86) July 20, '86, died Aug. 7, '86.
9. Three months old hog inoculated with culture from Mr. W's pig (of July 8, '86) July 20, '86, recovered.
10. Same as No. 2, inoculated with culture from Mr. W's pig (of July 8, '86) July 20, '86, no effect of consequence.
11. Same as No. 4, inoculated with culture from Mr. W's pig (of July 8, '86) July 20, '86, no effect of consequence.
12. Same as No. 1, inoculated with culture from Mr. W's pig (of July 8, '86) July 20, '86, no effect of consequence.
13. Another pig same lot as Nos. 2 and 4 inoculated with same material, no effect of consequence.
14. Healthy pig inoculated with tenth generation of same material as 6 to 13, Sept. 28, died Oct. 13, '86.
15. Healthy pig inoculated with third generation of material from Rising, Neb., Sept. 28, died Oct. 7, '86.
16. Healthy pig inoculated with third generation of material from Rising, Neb., Sept. 28, recovered.
17. Healthy pig inoculated with third generation of material from Rising, Neb., Sept. 28, died Oct. 15.
18. Healthy pig inoculated with third generation of material from Rising, Neb., Sept. 28, died Oct. 16.
19. Healthy pig inoculated with third generation of material from Rising, Neb,, Sept. 28, recovered.
20. Healthy pig fed with potato culture of same bacteria Oct. 23, no ill effects.
21. Healthy pig inoculated with three grammes boullion culture from spleen of sick pig Oct. 27, died Nov. 17; lesions very marked.

22. Same as No. 2
23. " " 4
24. " " 13
25. " " 19

Inoculated with 5 fl. grammes of a pure boullion culture from the Rising outbreak, which killed rabbits in four days. Some swelling and heat at point inoculated, and lameness. No other evil effects.

26.
27.
28.
29.
30.
31.
32.

Healthy pigs 6 mos. old.

All raised at college farm from sows that had had the swine plague the previous winter and recovered. Each inoculated with 3 fluid grammes of a vaccine on the 14th of November, '86. Somewhat off feed for a few days. Heat and swellling at point inoculated.

Again inoculated with the same material on Nov. 27, '86. Appetite not much affected. Some swelling and heat at points inoculated.

The above experiments show that the hogs which had the swine plague could not be reinfected by inoculation, nor by contact nor by pen infection, as they were not only placed in the

pens with sick hogs, but also in the same pens with the pigs killed by inoculation with pure virus.

The next question was to expose these hogs to natural infection in the most extreme manner possible. A most severe outbreak of swine plague at the farm of a Mr. B. near Lincoln offered not only a fitting opportunity, but the severe snow storm of November 17, in which my test hogs were snowed in with a large number of sick, and a dozen or more dead hogs, added to the severity of the test.

EXPERIMENT.

Five hogs that had had swine plague the previous winter at the college farm, four of which had been repeatedly tested as mentioned above, and one which had not been so tested, as well as Nos. 26 to 32 inclusive, and two non-treated pigs, (test pigs) were sent to the place mentioned. Fourteen in all.

The results of this experiment were not as satisfactory as could be wished for various reasons.

First.—The smaller pigs were rather fine quality, and four of them were either stolen or run over by the cars which went close by the field where the sick drove was, and the wire fence did not keep the smaller ones in.

Second.—The two test pigs and one vaccinated pig died of the swine plague or of the storm, but had the lesions of swine plague; they were found covered with snow and frozen stiff, so that an autopsy was made at some inconvenience. Cultures grew from the spleen and mice succumed to the cultures.

Two of the inoculated pigs, being small and somewhat weak, died the second day after their return to the college farm from general exhaustion. No lesions of consequence; nor were bacteria to be found in them either by examination of their blood with the microscope or by cultivations.

Fourth.—The five hogs from the college farm that had the swine plague, and been already severely tested, as well as the one from the same lot that had not been so tested, went through this exposure to infection and storm without any visible ill effects, though exposed for twenty-three days, and have remained well ever since.

The result obtained then had only this value: It completely demonstrated that the majority of hogs that have been through swine plague from natural infection will not have the disease a second time, even after very severe tests, and therefore that prevention by vaccination is possible.

With regard to the two inoculated pigs that died from the effects of exposure, I will claim nothing, but will mention that the Hon. S. W. Burnham, senator from Lancaster, who so kindly placed the infected herd at my disposal to do anything I pleased with, remarked "that those small pigs will not live anyway if severe weather comes on." I also vaccinated some forty of Mr. Burnham's hogs, and very severely; those hogs came through and have since thrived better than any other hogs on the place. Whether this fact was indeed due to the inoculation or not cannot be positively asserted, but there is a favorable suspicion that it was.

I wish to publicly express my thank Mr. Burnham for the extremely kind and liberal support he gave me in my work, placing, as he did, his man and everything I desired at my disposal.

TEST EXPERIMENTS.

The next thing was to try the vaccine test over again. To this end fresh pigs numbered with tags in the ears were selected; their numbers were 41, 42, 43, 44, 45, 46, 47. Nos. 42, 43, 44, 45, 46, 47 were first inoculated with four fluid grammes—in the inside of the hind leg—of a mild vaccine upon November 4, 1886, and again with six fluid grammes of a stronger vaccine upon November 27. While thrown off their feed, and somewhat lame, with some heat and swelling in the inside of the hind leg, they did not seem to suffer very much. No. 41, which was the same pig as number 20 in the previous list that had been fed with pure potato cultivations, was inoculated with the same amount of vaccine as the others (six fluid grammes), on the 27th of November.

December 27 Nos. 41 and 44 were inoculated with six fluid grammes of a fresh culture (second generation) made from the spleen of a hog from a very virulent outbreak at Valparaiso, Neb. These hogs were inoculated directly into the abdominal cavity. On the same day and at the same time Nos. 47 and 46 were inoculated with the same material in the inside of the hind leg.

December 29 No. 41 died from the effects of the bacteria only, that is of septicæmia, or blood poison, as can be seen from autopsy No. 1. Its blood and the tissues of the spleen were literally swarming with the well-known bacteria. Though frozen solid, cultivations grew from the spleen and two rats inoculated with 1 c. c. m. of a boullion cultivation from the same succumbed in forty-eight hours. Pure cultivations were obtained from the rat, and have since been retested and again proved fatal.

Nos. 44, 42 and 46, that had been vaccinated twice in thirty days, were somewhat off their feed and lame a few days, but entirely recovered, while 41, that was only inoculated once, succumbed.

On December 12 numbers 45 and 47 were again inoculated with six fluid grammes of a boullion culture that had previously been tested upon rats and proved fatal. These pigs also recovered completely, and may be considered proof against swine plague.

We have therefore positively proved that we can prevent swine plague by inoculation of healthy swine with an artificially prepared virus.

We have now hogs 44, 42 and 46, that will to a dead certainty withstand all exposure to infection, if placed among sick hogs, as they were tested with a vaccine of unusual malignancy for this year's swine plague in the State.

The fact that No. 41 succumbed so quickly to the same virus, though the liveliest pig in the lot, shows that one vaccination is not sufficient.

Nos. 45 and 47 will probably also withstand any natural test, as they have been inoculated three times.

No. 43 has been purposely left without the final test inoculation, but will, I think, stand it also. While there is an immense amount of detail work yet to be done, we have got to fix the exact amount of inoculation necessary, and the time which is necessary to elapse for the constitutionalization of the virus so that immunity can be produced. I hope to find some small animal so susceptible to the virus, that by passing it through a short series of such animals, it will attain a constancy of virulence

capable of killing hogs in about five days, and have no doubt that it can be done as soon as we have means to experiment properly. This fact settled, we shall then have a simple and more practical way of obtaining material than by taking material from sick swine, where I find there is a great variation in the natural virulence of the germs.

On account of having no place suitable to breed and keep small animals this winter, I have been really unnecessarily retarded in my work, as I think, had its value been truly appreciated, such room could have been supplied me. As it is, I can but think that the work done should satisfy every reasonable person of its quality, and my known skepticism should be a sure guarantee of the trustworthiness of the results. I am prepared to subject the above pigs to any test that may be suggested before a committee of farmers or members of the Legislature, had we means to do it. All we now need is the means to make one grand test experiment, which I propose to do as soon as the funds you have so kindly asked for are at our disposal.

I shall then request a committee of the Board of Agriculture to watch the experiment, and shall inoculate one hundred pigs in different ways and with different amounts, and then place an equal number of diseased hogs among them, and some fifty healthy ones, and am confident that I shall be able to previously name the hogs that will withstand infection on such exposure.

When these results are compared with those made with vaccine inoculations to prevent anthrax, they seem to show that the time in which an artificial immunity can be produced in susceptible animal organisms is dependent upon the virulence of the disease in question; that is, that the time in which artificial immunity can be produced in any given disease will be found to depend upon the rapidity of the course of said disease under natural conditions. Take anthrax, for instance, a disease, the course of which can better be counted by hours than days. According to the reports which have come to us of the results with Pasteur's vaccine, and the methods used to inoculate show that even in that disease it takes from fifteen to twenty days to produce a reliable artificial immunity, but even then, in this case, there seems to be

a want of exact experimental data fixing this period. The animals are first inoculated with a weak vaccine, and ten days afterwards with a stronger one, when they are considered to be free from any danger to natural infection. But the all important question, when this period absolutely begins, has not been satisfactorily determined.

With regard to the swine plague, my idea is, that as this disease is not so acutely fatal, that this period will be found to be longer, say thirty days, and that it cannot be reduced without using a virus so strong as to be dangerous.

Another difficulty which we had to deal with this year was the uncertainty of the natural virus in its virulence. As is well known, the disease has been unusually mild in Nebraska during the summer and fall of 1886, and even in different localities it has varied much in its virulence. In some cases it took very much greater quantities of the same kind of a culture to produce death than others. Another fact of great practical importance in the endeavor to obtain a reliable vaccine is the rapidity with which the germ of swine plague loses in virulence under artificially cultivated conditions, as well as the irregularity in this direction, between the germs of different cultures in different tubes, which were, however, all inoculated from the same original material and at the same time.

These difficulties do not exist with anthrax to any such degree, though the cultivations do lose in virulence after the same original culture has been passed through many successive artificial generations, as has been shown by Germany's great pathogenic bacteriologist, Robert Koch.

The really unpleasant and disturbing characteristics of the germ of swine plague surmount the production of a reliable vaccine with difficulties which can be overcome, however. Pasteur claims for his anthrax vaccine, as well as that for rouget and even rabies, that when a cultivation of the germs has been subjected to a certain known line of treatment, and a certain degree of attenuation attained, that this degree of attenuation remains constant; that is, that a vaccine of the same and a constantly reliable degree of attenuation can always be manufactured from inoculat-

ing or sowing fresh infusions of sterilized boullion, and so on indefinitely. This assertion is contradicted by the above-mentioned experimentally confirmed conclusions of Koch with regard to the bacillus of anthrax losing its virulence after being carried in successive generations through some fifty cultivations.

This, like the majority of Pasteur's assertions, needs the confirmation of exact test experiments.

With regard to the germ of swine plague, our own and other experiences go to show that no such constancy of virulence or attenuation can be depended upon through any large number of successive artificial cultivation, but as said before, it will be necessary to discover some one among the smaller animals (or in case of necessity, by the use of young pigs) that has a very excessive degree of susceptibility to the germ of swine plague, and in which it soon acquires the highest degree of virulency by being passed successively through a small number of said animals, in order to obtain material which can be relied upon to manufacture vaccines from. This is not the difficult task it appears to be.

VETERINARY JURISPRUDENCE.

FORENSIC MEDICINE.

By D. P. YONKERMAN, Cleveland, O.

The importance of this subject is so great that I attempt to write upon it with no little hesitation and fear, knowing that I shall be far from able to do it anything like justice. But trusting in your forbearance, and hoping that something I may vaguely touch upon may give light to some of you, or, at least raise inquiry whereby benefit to the profession and ourselves may result, induces me to undertake at least a synopsis of this vast and important subject. I therefore pray your more than ordinary attention to the subject matter herein contained.

It were well for us at the outset to grasp the impotance and responsibility of our task. Your first day in practice, your first call, may bring you face to face with a medico-legal case requiring all our thought and acumen, powers of observation, knowledge of

facts and habits of induction. To illustrate: an intending purchaser brings you a horse for examination. Is he sound or otherwise? a sale, and possibly a lawsuit, depends on your statement. A valuable colt may have been found; was it born dead or alive? The body of a horse is discovered: what was the cause of death? You are called to see a patient; is its illness natural disease or the effects of poison? These are a few examples of many hundred of questions, any one of which your first day's practice may require you to consider—for the practice of forensic medicine devolves on the profession generally, and not on a few in particular. I admit that in some cases experts are consulted, but for the actual facts, conditions, symptoms and the like observed at the moment, the general practitioner must, as a rule, be held responsible. Think of your responsibility. The evidence given and the opinion expressed by you in open court may be reported in several papers and will be conned over and discussed whenever read; depend upon it, if your evidence in any case be one-sided, if your judgment be biased, if your opinion is not founded on knowledge, or is swayed either for or against the accused by popular sentiment, friendship, or by a want of common-sense or science, that one medico-legal case may mar your career, as it may—if you being thought, learning, power, judgment, discrimination, discretion and common sense to bear upon it—make it. In your testimony be jealous for the truth, careless whom you please or displease; do not let your judgment be influenced one iota by the lawyers or interested person; be careless which way the verdict goes so long as your evidence is that of honest conviction, of intelligent judgment, and of accurate observation.

The faculty of observation, next to the power of scientific analysis, which is so essential to the veterinary practitioner, is almost the essential of a good medical jurist, for many of your observations will have to be conducted under difficulties of a most unusual nature; many in attendance will have an interest in raising a moral dust-cloud to blind your eyes or obscure your vision.

Probably the most trying position of the veterinary surgeon is when giving evidence, and for that reason I shall consider briefly that important branch of forensic medicine, as upon it a great deal depends, for by it he brings the facts he has observed or

otherwise accumulated before the court and the public. It is, therefore, essential that he should have clear views as to what constitutes evidence, and, on the other hand, what is inadmissible as evidence. It is often a matter of regret that veterinary surgeons neglect the study of the rules of evidence, and suffer accordingly. The rule generally laid down is, that "no evidence can be given foreign to the question or points at issue," and this suggests a word on the relationship between the evidence given by an expert and the functions of the jury, which latter are not to be usurped by the former—for instance: In a case of suspected poisoning, the surgeon stated that certain symptoms he noted and described were consistent with poisoning with strychnia. In that connection this question was ruled improper: "Do you consider these symptoms were the result of the exhibition of strychnia?" but the following was allowed: What in your opinion was the cause of the symptoms that you say were consistent with poisoning from strychnia?" The first question the jury were there to decide; the second was only the opinion of the medical expert, and did not userp the jury's duty.

As a general rule, hearsay is not evidence. The law believes no man's bare assertion, but there are exceptions to this rule, as pedigrees, prescriptions and customs; the statements of the dead are admitted as the only means of getting at the facts.

Evidence may be sincere without being true, for instance: A man honestly believes an animal to be sound, and so testifies; but future developments proved it unsound unknown to the man.

Evidence is of two kinds; Positive or Direct, and Circumstantial. Thus if an expert says, "I am certain the lungs were diseased, for I saw them;" then that fact is proved as far as a fact is capable of proof. But if he says, "To the best of my belief the lungs were diseased," explaining at the same time that owing to lack of proper examination or other existing circumstances he is not certain, it is circumstantial evidence.

Thus we must, as expert witnesses, always bear in mind that we are called no to usurp the functions of the jury in venturing to decide the case submitted to them and them only, but merely, as far as we can, to assist them in their deliberations.

Scientific or expert witnesses may be called either as common

witnesses or as experts or (what is perhaps more frequently the case) both as witnesses of facts and as experts.

A common witness has to speak as to the matters of fact which have come within his personal knowledge. That the animal he was called to see had sustained severe injuries; that poison was present in the stomach of the animal on which he held a post-mortem examination, are facts to be proved by scientific witnesses; in which, save in the nature of the facts on which he has to give evidence, he in no respect differs from an ordinary witness. Further, if any fact relating to the case be within the personal knowledge of the scientific witness, a subpœna served on him to speak to that fact in a court of law is as imperative as when served on any other witness. But the skilled or expert witness, as he is termed, is called to state his opinions either on facts observed by himself or proved in evidence by others. No witness can be compelled to give his opinion in the witness box. The expert, however wide his experience, cannot be forced to give the court the value of his general and special knowledge. The skilled witness must form his opinions on the facts he has heard proved. Thus expert testimony has been refused because the surgeon had not been present during the time that the witnesses were giving their evidence, but had based his opinion on the facts submitted to him in writing by the attorney. Hence it is not enough for an expert to run into court the minute he is wanted; but it is necessary that he should be able to say that his opinions are based on the evidence he has himself heard in the witness-box. And here a few words may be suggested on the vexed question of expert evidence. Nothing is meaner to contemplate than a traffic in evidence, either for gain or notoriety. Hence I would suggest the following rule that in my judgment should always guide the scientific expert, namely: that no one is justified in giving evidence in support of a case, or in support of part of a case, upon which he may be especially retained to give evidence, that he does not believe right and true. Any evidence offered by the expert in the witness-box should be honestly and truly his scientific belief, influenced by reasons as definite and as accurate as if he was arguing the points in dispute before a scientific tribunal competent to judge his arguments and pronounce on his opinions. If the ex-

pert be guided by this rule it seems to me that expert evidence will be far from the worthless thing that some would affect to regard it. Always bear in mind that the truth is the object of all legal inquiry. In all expert evidence the witness must never for a moment transgress the limits of scientific accuracy nor with the warmth of a partisan, or the desire to do the best he can for his case, permits himself to color or distort, directly or indirectly, the hard, straight and inflexible lines of well attested scientific facts such as he would never dream of disputing, coloring or distorting before a learned society.

A witness must not quote authorities in the witness-box, although there is sometimes a great temptation to do so. But he must remember that he is called to give *his* opinion and not to say who agrees or disagrees with him. No written or published opinion of a living authority can be quoted even by counsel, the law requiring that if the opinion of such authority be deemed necessary in the judgment of those conducting the case, the authority himself should be called to state his opinion on oath and be subject to cross-examination.

And here I want to give you a word of practical advice. If a quotation from the works of a deceased authority is read to you in cross-examination, and you are asked how far you agree or disagree with the opinion expressed, never under any circumstances accept the quotation as expressing the opinion of the authority in question; neither assent to nor dissent from the quotation until you have asked to be permitted to see the book from which the quotation is made, for a counsel may misrepresent the author wilfully or by mistake, as one sentence preceding or following the quotation read will often put an entirely new aspect on the quotation itself.

(*To be continued.*)

REPORTS OF CASES.

HUMAN AND ANIMAL RABIES.

By A. W. Hoover.

I have just read in the February Review a continued description of rabid animals, and the post-mortem revelations by Dr.

Billings, of Nebraska. Now, Mr. Editor, with your permission, and a small space in the REVIEW, I will state some of my observations of hydrophobia in the human subject, as well as that of the brute creation. I will at present only mention the case of one rabid dog and the disastrous results to life that occurred in Burlingame County, Kansas, twenty-eight years ago. I am prompted to make a statement of this case from a desire to have it recorded for future generations to read, rather than to enlighten any one who may be well informed.

One evening between sundown and dark, as I was going home, I saw Mrs. Parks about a block ahead coming towards me, and a large black dog close behind her on a brisk trot. I immediately put the lady on her guard. As she looked round, the brute was at her right side, and taking her face in his mouth, he pulled her to the ground; then, turning a square angle, he ran off and left her. I took Mrs. Parks to her home and dressed her wounds. They healed by first intention. An effort was made to quiet her mind as to the animal being rabid, but this was of no avail, as she insisted that he was mad. One week from the time of her injuries she was taken to Missouri to try the effects of a madstone, and the result appearing satisfactory, she returned home on the twenty-eighth day after she was bitten. I saw her that evening; she was cheerful, and apparently in good health. Saw her the next morning, and the first words that struck my ears were, "I am mad! I am mad!" In answer to the question as to her reasons for thinking so, she replied, "I have alternate paroxysms of heat and cold through every nerve and fibre of my body." Towards evening a phlegm in her throat became very troublesome, and next day so much so that a pan of ashes was used for her to spit in. When holding the pan for her, she would exclaim, "Don't come too close to me, for I have a great desire to bite!" When a glass of water was presented, she would go into terrible convulsions. Either from fear or having no desire to do so, she ate or drank nothing during her illness, which lasted three days and nights.

After the rabid brute left Mrs. Parks, he ran into the lot and bit one of the horses. From there he went to a barn and bit a two-year-old filly and other smaller stock, and then lay down by

a hay-stack and was killed the next morning. All of the bitten stock either died of rabies, or were killed.

I will only refer to the horse. Two days after the death of Mrs. Parks the animal became uneasy, restless and easily excited. He would dart furiously at a calf which was walking alongside of the fence in which he was inclosed. He then commenced to bite and tear the muscles from his front legs and other parts of his body, and finally ran and jumped into an out-building and tore it to pieces. He was shot in his frantic madness.

CERVICAL DISLOCATION.

By D. A. Cormack, D.V.S.

The following case seems to me of sufficient importance to warrant me in asking for it a place in your very valuable journal.

On December 23d, 1886, I received a telegram from L. V. Sybrant, living eight miles southwest of Watertown, Dak., stating that a mare had been seriously injured, and asking me to come in all haste. On arriving, I found that a fine animal had been kicked during the night by other horses, and when found in the morning she was lying against the wall of the barn, unable to rise, but previous to my arrival they had lifted her to her feet. I found her standing, supported by men. She was paralyzed in all four limbs, her head was inclined to the left side very much, and her nose on the ground. I lifted her head on my shoulder, and straightened the neck. When in this position the paralysis seemed to disappear, but returned on letting go the head, which fell back to the ground and to the left side. When in this position, the animal always kept turning to the right side. With the head on my shoulder, I distinctly felt the dislocation between the fourth and fifth cervical vertebræ. It would bulge to either side as the head was moved from one side to the other. When the neck was straight nothing could be seen, but on moving to either side the bones would jerk past each other, easily seen, felt and heard. I administered diffusable stimulants, put the animal in slings, and boarded the head and neck in proper position, in the meantime giving stimulants, laxatives and diuretics. Appetite was lost for two days; fæcal matter was passed regularly, but micturation had not taken place for two days. I visited her on

the 26th, and passed the catheter; of course this gave great relief. Her appetite returned; she began in a day or two to eat heartily, and in two weeks I took her out of the slings, took down all fixings from the neck, and set her at liberty. Two days after getting out of the slings she aborted her colt. Now she is doing well, feeding and taking exercise as if nothing had happened to her.

INANITION OF A FOWL FROM AN OBSTRUCTION IN THE PROVENTRICULUS.

By Chas. H. Flynn, D.V.M.

There was recently brought to my infirmary a Plymouth Rock cockerel, which, the owner said, had been declining the previous three weeks.

Examination showed the fowl to be wasted to nearly a skeleton; the abdomen nearly empty, the ingluvies nearly full.

Upon questioning the owner, I found that the wants of the fowl had been well provided for, and as I could find no signs of any particular disease, I told my patron the best I could do was to make a post-mortem examination. To this he consented, and after destroying the fowl, we found the cause of the trouble to be the sacrum of another fowl firmly lodged in the proventriculus, and causing a complete stoppage of the tract except to liquids, thus causing gradual starvation.

COMMENCEMENT EXERCISES.

AMERICAN VETERINARY COLLEGE.

The commencement exercises of this institution took place on the 4th of March at Chickering Hall, before a large number of friends of the graduates, alumni, and of the college, who crowded the house a long time before the orchestra of the Seventh Regiment struck up the opening march.

The platform was occupied by the Board of Trustees and the Faculty, and the exercises were opened by the President, F. D. Weisse, M.D., of the Board of Trustees, who, at the call made by Prof. A. Liautard, delivered the diploma and degree of D.V.S. to the following graduates:

Theodore William Apeldorn, Philadelphia, Pa.
Don Carlos Ayer, Leavenworth, Kans.
Leidy James Bachman, Bethlehem, Pa.
Roscoe Rutherford Bell, Brooklyn, N. Y.
George C. Blaker, Flemington, N. J.
Daniel Sylvester Breslin, Brooklyn, N. Y.
George Bridges, Norwalk, Conn.
Solomon Bock, Cheyenne, Wyo. Terr.
Ephraim Booth, New York city, N. Y.
Richard Edward Buckley, New York city, N. Y.
Henry Cady, Cobleskill, N. Y.
Andrews George Collins, New York city, N. Y.
Willis Ward Curry, Mahopac Falls, N. Y.
John Demarest Deronde, Spring Valley, N. J.
Henry Holland Dews, New Bedford, Mass.
John Daniel Fair, Berlin, Ohio.
William Henry Fairbanks, Winthrop, Maine.
Joseph Robert Hammond, Port Jefferson, Long Island, N.Y.
Wilfred Follansbee Harrison, Verona, N. J.
John D. Hartman, Penn, Pa.
William Henry Hitchings, East Somerville, Mass.
Julius Huelsen, Jr., Jersey City, N. J.
Andrew Hyde, Glartonburg, Conn.
Joseph Cornelius Jackson, Yonkers, N. Y.
James Leander Kidd, Midway, Ky.
Patrick Francis Kiernan, Jefferson Barracks, Mo.
Frederick Lamberton, Westfield, Mass.
John Francis McGrath, Pawtucket, R. I.
William Tucker Miller, Plumville, Pa.
John Schorle Meyer, Naopoint, Mo.
Oliver Ritter Meyer, Rittersville, Pa.
Herbert Neher, Rhinebeck, N. Y.
William Hill Nice, Germantown, Philadelphia, Pa.
William Somerville Ortgies, New York city, N. Y.
Albert Tobias Sellers, Philadelphia, Pa.
John Shea, New York city, N. Y.
John Johnson Shoemaker, Bluffton, Ind.
Wilder Daniel Southwick, Millsville, N. Y.

Oliver Henry Tims, New York city, N. Y.
William James Tomlinson, Williamsport, Pa.
Richard Lockwood Tucker, Bermuda, W. I.
Thomas Joseph Turner, Glasgow, Mo.
Lewis Coburn Wakefield, Montville, Va.
George Washington Werner, Joliet, Ill.

The prizes were delivered by Prof. Doremus, as follows: Dr. Julius Huelsen, Jr., the gold medal of the Board of Trustees for the best general examination; Dr. Roscoe R. Bell, the set of books offered by the Alumni Association for the second best general examination; Dr. James L. Kidd, the gold medal given by the Faculty for the best practical examination; Dr. J. D. Fair, the Michener prize of a silver medal for the best paper presented and defended before the College Class Association.

The valedictory address was delivered by Dr. W. Harrison, the address to the class by Mr. F. Coudert, and the prayer and benediction by Rev. Dr. Duryea.

LIST OF VETERINARY PRACTITIONERS

REGISTERED IN WESTCHESTER COUNTY.

Name.	*College.*
Suaman Bradley	American Veterinary College.
Henry B. Boyd	" " "
Frederick P. Ruhl	" " "

REGISTERED ON AFFIDAVITS.

Name.	*How long practising.*
W. S. Hallack	3 years.
A. Y. Mullineaux	20 "
S. G. Tattersall	10 "
Ph. A. Carpenter	50 " ?
A. B. Marsh	7 "
Cable W. Horton	30 "
Mannsell T. Miller	15 "
Ellerd Miller	3 "
Richard Nolan	20 "
John C. Alaire	30 "
David G. Montross	15 "
Ard. T. Reynolds	20 "
Aaron K. Silkman	15 "
W. P. Van Tassell	20 "
Chas. W. Sterns	15 "

IN WAYNE COUNTY.

Name.	*How long practising.*
Charles H. Biglow	20 years.
Cornelius Brundrig	35 "
Erastus Brownwell	35 "
J. Burghdors	20 "
James Clark	6 "
James Curry	15 "
Daniel Crowley	10 "
George Carver	3 "
Marion Cotton	4 "
Henry Chatterson	5 "
Lewis French	16 "
George Hancock	20 "
Charles E. King	20 "
Perry B. Lee	40 "
Meiah Milliman	20 "

Andrew S. Peer.
Charles E. Purdy.
George A. Scullin.
L. D. Seymour.
Obadiah Welch.
John Rushmore.
Lorwin Scullin.
Nathaniel K. Sheffield.
James Vandenburg.
Alfred Wooley.
Henry G. White.

SOCIETY MEETINGS.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

The regular semi-annual meeting of the United States Veterinary Medical Association was held at the University of Pennsylvania, Veterinary Department, Philadelphia, March 15th, 1887.

The Comitia Minora was called to order at 10.30 A. M. by the President, Prof. Liautard, and upon roll-call all members except Drs. Lyman and Field were found to be present.

Of the fifteen applications for membership all but one were favorably reported to the general meeting.

Remarks were made by Dr. L. McLean and others concerning the admission of non-graduates. The Secretary gave notice that he would, at the next meeting, propose an alteration of Secs. 1 and 4 of the By-Laws, admitting none but graduates of the veterinary or medical professions to active membership.

No further business offering, the Comitia Minora adjourned.

The regular session convened at noon, with the President, Prof. Liautard, in the chair. Fifty members answered the roll-call.

On motion of Prof. L. McLean, the reading of the minutes of last meeting was dispensed with. The minutes of the meeting of Comitia Minora were read and accepted. The Committee on Education and Intelligence then reported, through its chairman, Prof. Huidekoper. He read communications from the following members of that committee: Drs. Paquin, Coates and McInnes. The report was accepted and placed on file.

At this point, at the suggestion of different members, the Secretary was instructed to enforce Sec. 3, Art. 8, of By-Laws.

Dr. Hoskins, as chairman of the special committee to secure a uniform standard of examinations by the different veterinary colleges of North America, gave a most encouraging report, stating that representatives from the different schools would soon meet, and in all probability adopt such a course.

Dr. Zuill, Chairman of the Committee on Diseases, read reports from different States. This was also accepted and placed on file.

The following gentlemen were then admitted as members of the Association:

Francis Bridge, W. H. Martenet, James A. Walrath, Robert C. Jones, C. Saunders Breed, D. D. Lee, K. Winslow, E. C. Beckett, Thos. Bland, Geo. G. Van Mater, W. E. Cuff, Wm. Rose, T. S. Butler, Wm. Harris.

Dr. D. E. Salmon was then unanimously elected an honorary member.

After the applications for membership were received, Prof. Huidekoper moved an adjournment for lunch, which was carried. (Prof. Huidekoper had furnished an excellent lunch in the college building).

After lunch, Dr. Pendry spoke of the failure of the Committee on Army Legislation to report, and, after reading the pending bill, secured the endorsement of the same by the Association, the Chief Veterinarian to hold the rank of Colonel.

On motion, the President was directed to appoint a special committee to take charge of this bill, and that one hundred dollars be set aside to be used by said committee.

On motion of Dr. Hoskins, the President was directed to appoint a Publication Committee, to publish the reports presented to the meetings of the Association on contagious diseases, etc., and that these reports be distributed among the members of the profession.

In answer to Dr. Salmon, most of the members expressed their belief in the mediate contagiousness of contagious pleuro-pneumonia, and all condemned inoculation so long as the *possibility* of extermination of this disease exists by means of slaughter of diseased and exposed animals.

The following preamble and resolution was unanimously adopted:

WHEREAS, Legislation in Congress on the subject of contagious pleuro-pneumonia has brought before the public the views of certain members of that body in relation to that disease and our profession, which are not in accordance with generally received opinions, therefore be it

Resolved, That this Association does not consider it necessary to determine by any commission the specific character of that disease and its contagious nature, and that we heartily endorse the labors of the Bureau of Animal Industry, and have full confidence in the fulfillment of its future work.

Resolutions were adopted condemning inoculation and endorsing the opinion that contagious pleuro-pneumonia may be extended by mediate contagion.

Resolved, That this Association is convinced that inoculation for contagious pleuro-pneumonia is inapplicable, and should not be adopted in the United States.

Resolved, That no animals should be placed in the infected stables until thorough disinfection has taken place.

Resolved, That all animals exposed to, or having the disease, should be destroyed.

Tuberculosis was next discussed by many of those present, and the following preamble and resolutions were adopted as the sense of this Association:

WHEREAS, Tuberculosis is extensively prevalent throughout this country in both cattle and man, and whereas the consumption of meat and milk from tuberculous animals is the direct cause of a large proportion of the 125,000 human deaths which occur annually in the United States from tuberculosis, therefore be it

Resolved, That the attention of all Boards of Health throughout the country be called to the necessity of a rigid and competent inspection of all milk dairies and slaughter-houses.

Resolved, That all Boards of Health should have attached to their staff *qualified veterinarians* to carry on such inspection.

To further this object the Chair appointed a committee, consisting of Drs. Huidekoper, Winchester and Salmon, to publish the action of this Association in circular form and send it to the different Boards of Health of each State and Territory.

Dr. Pendry gave notice of proposed alterations of By-Laws at annual meeting concerning "Code of Ethics."

The Secretary then read two communications from B. McInnes, Jr., one on the subject of Osteo-Sarcoma, and another, accompanied by specimen, of fracture of skull of horse by the kick of a mule. Owing to the late hour these papers did not elicit the discussion they should have done.

Prof. McEachran, who had taken an active part in all matters of interest before the Association, then urged that as soon as possible representatives from the different veterinary colleges meet and endeavor to raise the standard of studies, and lengthen the course to three years.

Pursuant to this introduction by Prof. McEachran, it was moved by Prof. Lyford, and unanimously carried, that the sense of this Association is, that there be a uniform matriculation examination, three terms, of six months each (and, if possible, a summer session), and that the students of all colleges be finally examined for graduation by a common examining board.

Communications, bills, etc., were then brought to the notice of the Association and disposed of. The banquet was held at the Hotel Bellevue, and was attended by most of the members as well as by several guests prominent in the medical and other professions. There was but one expression of opinion, *i. e.*, that the present meeting was one of the best—if not the very best—ever held by the Association.

CH. B. MICHENER, *Secretary*.

PENNSYLVANIA STATE VETERINARY MEDICAL ASSOCIATION.

(Reported for the REVIEW by W. Horace Hoskins.)

The Pennsylvania State Veterinary Medical Association met at Philadelphia on Monday, March 14th, 1887. Prof. Sallada called the meeting to order at 10.30 A.M. On roll-call, the following members responded:

Drs. W. S. Wooster, T. B. Raynor, Geo. B. Rayner, J. R. Keeler, J. W. Sallade, R. Gladfelter, S. E. Weber, W. H. Knight, H. T. George, P. M. Minster, J. C. Fly, Z. S. Keil, W. Horace Hoskins, R. S. Huidekoper, James B. Raynor, John B. Raynor, Alex. Glass, N. Rectenwald, Isaiah Michener, J. Curtis Michener, W. L. Zuill, John R. Start, Francis Bridge, C. J. Blank, N. E. Reinhart, J. U. B. Tretz.

The following were present as visitors: Dr. C. J. Moulton, of Washington, D. C.; Dr. A. T. Sellers, Dr. W. B. E. Miller, Pres. of New Jersey State Association.

The minutes of the last meeting and special meeting were read, and with slight corrections adopted.

Nominations and election of officers being in order, the following were chosen for the ensuing year:

President—Thos. B. Raynor, V.S.
1st Vice-President—W. L. Zuill, M.D, D.V.S.
2d Vice-President—W. H. Knight, V.S.
3d Vice-President—P. M. Minster, V.S.
Corresponding Secretary—Alex. Glass, V.S., 2006 Bainbridge Street, Philadelphia.
Recording Secretary—R. Gladfelter, V.S.
Treasurer—J. C. Fly, V.S.
Board of Trustees—J. C. Michener, W. Horace Hoskins, James B. Raynor, W. S. Hooker, and R. S. Huidekoper.

A recess being taken, the Board of Trustees convened and recommended for membership Dr. C. C. McLean, of Meadville, Pa., a graduate of the Toronto College.

The Committee on Legislation, through Dr. W. Horace Hoskins, reported a new bill that had been drawn up, embodying new features. The bill was then read and explained, and adopted.

After some discussion as to the plan to pursue in regard to members who had as yet failed to comply with the requirements of the Association, it was decided by a unanimous vote to destroy the certificates of Drs. Jas. McCoart, A. S. Sheimer, C E. Ogden, L. C. Campbell, and A. S. Borneman.

The meeting then adjourned, to partake of a bountiful lunch provided for the members and visitors by courtesy of the Philadelphia members of the Association.

On reconvening the President announced as a committee on legislation, to take up the work of arousing the profession and its friends to the importance of this step, this committee to work in harmony with a like one from the Keystone Veterinary Medical Association: Drs. W. Horace Hopkins, W. S. Hooker, W. L. Zuill, R. S. Huidekoper, C. C. McLean, N. Reckwold, and Jas. B. Raynor.

The death of Dr. M. W. Birch then being referred to, the President appointed Drs. T. B. Raynor, W. S. Hooker and W. Horace Hoskins a committee to draft appropriate resolutions.

After kindly referring to the able letter of Prof. Law to the authorities at Washington, relative to contagious pleuro-pneumonia, it was unanimously decided to extend him a vote of thanks from this Association. A similar act was extended to the Bureau of Animal Industry for their most excellent work.

Dr. C. C. McLean, of Meadville, then outlined a bill that had been presented at Harrisburg, establishing a license for horses used for stud purposes, requiring that they be examined for soundness by a qualified veterinary surgeon before registration, and giving their owners power to recover by law, after 9 months, the fees for service. At this point Dr. Huidekoper referred to the number of prize stallions, cattle, etc., in the State who were unsound and blemished and utterly unfit for breeding purposes. Dr. Hoskins heartily agreed with the good features of the bill, but looked only for it to be a dead letter in great measure, as there was no law, moral or statutory, that yet defined for Pennsylvania a qualified practitioner of veterinary medicine and surgery. The sense of the bill was approved by the Association.

The National Veterinary Medical Association having sought from our Secretary the reason why our Association had not paid the assessment levied upon it, the Secretary, on motion, was directed to inform them that this Association acknowledged no allegiance or sympathy with that body, and did not propose to pay any such assessment.

The reading of papers being next in order, Dr. W. Horace Hoskins opened the subject now generally referred to under the name of "Azoturia." He offered for discussion the probability of it being a nerve lesion, of the vascular character, having its seat about the centre of lumbar enlargement of the spinal cord, involving particularly the anterior or inferior cornea of the cord, giving a number of peculiar symptoms and conditions noticeable in the course of these cases, that could only find a reasonable interpretation under the above heading. A good discussion followed, being entered into by Dr. J. C. Michener, who was impressed that it was largely a muscular disease, with great congestion of the blood vessels. Dr. Huidekoper agreeing in many points with the essayist, was rather disposed to class it under a similar heading with summer vertigo, with its starting point at the liver. Further remarks were indulged in by Drs. Zuill, Rectenwald and Start.

An able article was then read by Dr. Alex. Glass on "Sanoline," giving its origin, value and uses in veterinary practice.

Dr. Huidekoper exhibited specimens of glanders and farcy taken from subjects in his anatomical rooms, and gave a demonstration of the characteristic lesions noted.

The next meeting was announced to be held at Pittsburg, Pa.

The seating of the new officers then followed, with appropriate remarks, after which the meeting adjourned.

MARYLAND STATE VETERINARY MEDICAL ASSOCIATION.

A regular meeting of the Maryland State Veterinary Medical Association was held at the Academy Hotel, Franklin and Howard streets, Baltimore, on Thursday evening, February 17, 1887, at 8 P. M., a large number of members being present.

Letters of acceptance of honorary membership were read from A. Liautard, M.D., V.S., New York; E. M. Hunt, M.D., and W. B. E. Miller, D.V.S., of New Jersey, and R. S. Huidekoper, V.S., of Philadelphia, and on motion were filed with the Secretary. Dr. Martenet read the amendment to the constitution and by-laws offered by him at the preceding meeting, and to be known as Chapter I., Article IV., reading as follows:

The officers of this Association shall be elected at the regular meeting in February of each year for the term of one year.

The amendment was adopted. The Treasurer's report for 1886 was then read, and on motion was accepted.

T. F. Barron, V.S., of Baltimore, was nominated by Dr. W. H. Rose and elected to active membership, as was also A. F. McMaster, V.S. (Ontario College), Frederick, Md. Drs. C. P. Lyman, Massachusetts, F. S. Billings and J. F. Winchester, Massachusetts, were elected to honorary membership.

Officers were elected for the ensuing year as follows: President, William Dougherty, D.V.S.; 1st Vice-President, C. L. Moulton, D.V.S.; 2d Vice-Presi-

dent, T. W. Spranklin, D.V.S; Secretary and Treasurer, W. H. Martenet, D.V.S.; Board of Censors, Drs. William Dougherty, W. H. Rose, G. M. Steck, T. W. Spranklin and T. F. Barron.

Dr. Dougherty then exhibited specimens of fistulous tracts, obtained by the use of perchloride of iron tincture, and dilated upon the useful qualities of this drug for fistuluous tracts of all kinds. A motion of thanks was extended to the retiring officers, and the Association then adjourned.

W. H. MARTENET, D.V.S., *Secretary.*

ALUMNI ASSOCIATION OF THE AMERICAN VETERINARY COLLEGE.

The regular meeting of the Alumni Association of the American Veterinary College was held in the lecture room of the College on Thursday, March 3d, President Dr. Hoskins in the chair.

On motion, minutes of last meeting were laid over, and a motion being carried to admit the class of '87 to membership, a committee was appointed by the chair to so inform them, who returning with many of the graduating class, were welcomed and congratulated by the President.

The Committee on Dinner reported what arrangements had been made, which was received.

The report of the Committee on Prize was received through Dr. Pendry. On motion, the report was received, and an order was drawn on the Treasurer for the cost of the prize, together with the Secretary's account for disbursements.

Under unfinished business, the question of changing the date of meeting was again brought up, when, on motion, the matter was referred to the Executive Committee, with power.

The Secretary said he had been notified by the Dean of the Faculty that the Association was to elect an Alumni Trustee, as Dr. Hall's term had expired. He was instructed to reply, stating that Dr. W. B. E. Miller, Camden, N. J., had been elected to succeed Dr. Hall at the last meeting.

The election of officers was then proceeded with, and resulted as follows:

President, Dr. D. J. Dixon; Vice-President, Dr. H. B. Boyd; Secretary, Dr. W. H. Pendry; Treasurer, Dr. S. S. Field; Librarian, Dr. W. H. Hoskins.

The meeting adjourned to Clark's Hotel, where those present sat down to a well-laid table. The gathering was not as large as might reasonably have been expected, but it was a very pleasant one, and the faculty was well represented.

W. H. PENDRY, D.V.S., *Secretary.*

CORRESPONDENCE.

VETERINARY LEGISLATION.

Editor American Veterinary Review:

DEAR SIR.—I trust you will allow me to remind Dr. Lowe, in answer to his letter in your last issue, that the bill passed by

the New York Legislature was mutilated after it left my hands, and consequently its value lessened; but who is to be held accountable for such mutilation, I leave it for others to say; but it was done without my knowledge. However, it is one thing to ask, but quite another thing to get just what you may want, and certainly no easy matter to get a State law from a legislative body representing over five millions of people.

Looking over the proposed New Jersey bill, as published by you, I fail to see any of the good qualities of a bill that Dr. Lowe is so full of; perhaps he is one of those godly people who are taught to expect little. It simply calls for two years' experience to entitle any one to register, and even provides that "diplomas" issued by a county shall be recognized. Every bill following the New York one should be an improvement, certainly not the reverse.

In conclusion, I would say that I, notwithstanding all the endorsements presented, consider the proposed New Jersey bill is not by any means as good a one as that already in force in New York State.

W. H. PENDRY, D.V.S.

REGISTRATION OF SELF-CONSTITUTED VETERINARIANS.

FISHKILL-ON-HUDSON, N. Y., Feb. 12, 1887.

Editor Veterinary Review:

Permit me, through the columns of the REVIEW, to state that veterinary legislation has done little for the profession, at least in this section, as the registration of laymen still continues after the expiration of the time fixed by law expired, *i. e.*, November 11th, 1886. When in the County Clerk's office at Po'keepsie, the other day, I took a peep at the Veterinary Medical Register, and there found the names of the following gents who had sworn in on the following dates:

Benjamin C. Risedorf, Rhinebeck, Nov. 22d, 1886.

Godfrey Wolvern, Manchester, Nov. 23d, 1886.

Albert Flagler, Po'keepsie, Nov. 29th, 1886.

I asked Mr. Osborne, County Clerk, if any Supreme Court Judge gave a mandamus ordering their registration, when he answered in the negative, but said the last named had been highly recommended by the Supervisor. Now, the question arises,

what's going to be done about it? I would like to hear your views on this subject, through the next issue. There are other parties in this section who have registered without any claims whatever under the law. I shall give you the name of one, T. D. Roberts, who swears he has been practicing veterinary medicine and surgery as a profession for the last twelve years. Now, the fact is, this would-be veterinarian is a domestic—a knight of the stable-fork and broom, wearing livery and a cockade in his hat, and in the employ of the late A. W. Sargent and his relict, then and now a Massachusetts family spending every winter in Boston and the summers at Fishkill-on-Hudson. This worthy I have made strong efforts to bring before a Dutchess County grand jury for indictment, and for that purpose appeared before the District Attorney, John Hackett, in consort with N. F. Thompson, D.V.S., but met with stern opposition from a practitioner of that city, who, by the way, had been swearing for years by an authority of one of the veterinary societies which now appears only to bear date Sept. 15th, 1886. If the members of the various veterinary societies remain as lethargic and tardy as they have been of late years, I propose to give a number of them a general fanning through the medium of the leading newspapers of this State—the only medium, I believe, that will arouse them to proper action, which I will abstain from if the profession make a move in the right direction; but with the experience I have had in various veterinary societies and associations, I cannot but echo the sentiments of C. H. Peabody's appeal in your last issue.

Yours truly,

W. D. Middleton, V.S.

ANIMAL INSURANCE.

Editor of American Veterinary Review:

It would evidently look as if the services of veterinarians are getting down to a pretty low ebb, when an insurance company can manage to throw them in, as a tea store does crockery. The value of the service, of course, is not guaranteed, and well it might not be, if the examination for "unsound" and "diseased" horses are to be a guide. A client of mine lately had four horses insured at a cost that is promised not to exceed thirty-five dollars

for the year, in the Live Stock Owners' Mutual Benefit Association. This covers the loss of one or all the horses during that time, and veterinary services for the same period, and the examination of which constituted a punch in the ribs, to which the patient gave the usual response, and so was pronounced a fit subject for insurance. It would seem to me that this concern is offering a little more than it can do, at least the party in question thought so, as they said they would wish to keep their own veterinary services, so I write this with no hard feeling in the matter.

There is another insurance affair, called the Horse Owners' Mutual Benefit and Indemnity Society, but which has some regard for veterinarians, it having a consulting veterinary surgeon.

I have been written to from out of town regarding this insurance question, and I need hardly say that I have not endorsed the first-named, nor could I do so conscientiously, but I have not hesitated in saying that the Horse Owners' Mutual Benefit and Indemnity Society were not apparently offering to do more than they could carry out. In short, the one should be endorsed by the veterinary profession, and the other should not—a view I hope most of your readers will approve.

Yours truly,

W. H. PENDRY, D.V.S.

A CORRECTION.

PATERSON, N. J., March 7th, 1887.

Editor American Veterinary Review :

The act to regulate the practice of veterinary medicine and surgery in the State of New Jersey, as printed in the March number of the REVIEW, contains an error which I desire to rectify. In the second section, "two years' experience," etc., should read, "ten years' experience."

WM. HERBERT LOWE, D.V.S.

SITUATIONS WANTED.

By a graduate of the Montreal Veterinary College, having four years practice, a situation as assistant or overseer in a breeding establishment—or any other place as Veterinary Surgeon. Address C. D., Veterinary Surgeon, Montebello, P. Q., Canada.

By a young German Veterinarian, a situation where he would have good opportunity to learn the English language. Address H. LEMKE, P. O. BOX, 436, Litchfield, Ct.